JOURNAL OF ROBOTIC SYSTEMS

Contents

Volume 13, 1996

Number 1, January 1996

1 On the Robust Control of Robot Manipulators Including Actuator Dynamics
Chun-Yi Su and Yury Stepanenko

11 Generalization of Newton–Euler Model for Flexible Manipulators
Frédéric Boyer and Philippe Coiffet

25 A Two-DOF Manipulator with Adjustable Compliance Capabilities and Comparison with the Human Finger
Anirban De and Uri Tasch

35 Parametric Motor Control: A New Approach to the Control of Point-to-Point Manipulator Movements
Otmar Bock, Gabriele M. T. D'Eleuterio, John Lipitkas, and J. J. Grodski

41 MIMO and SISO Self-Tuning Hybrid Position/Force Control of Robotic Manipulators
Can Özsoy and Turan Şişman

52 Calendar

Number 2, February 1996

53 Experiments in Contact Control
Homayoun Seraji, David Lim, and Robert Steele

75 Vision Resolvability for Visually Servoed Manipulation
Bradley J. Nelson and Pradeep K. Khosla

95 Modeling and Fusing Uncertain Multi-Sensory Data
O. A. Basir and H. C. Shen

111 Solving the Forward Kinematics of Parallel Manipulators with a Genetic Algorithm
Roger Boudreau and Noyan Turkkan

JOURNAL OF ROBOTIC SYSTEMS

Contents

Volume 13, 1996

Number 1, January 1996

1 On the Robust Control of Robot Manipulators Including Actuator Dynamics
Chun-Yi Su and Yury Stepanenko

11 Generalization of Newton–Euler Model for Flexible Manipulators
Frédéric Boyer and Philippe Coiffet

25 A Two-DOF Manipulator with Adjustable Compliance Capabilities and Comparison with the Human Finger
Anirban De and Uri Tasch

35 Parametric Motor Control: A New Approach to the Control of Point-to-Point Manipulator Movements
Otmar Bock, Gabriele M. T. D'Eleuterio, John Lipitkas, and J. J. Grodski

41 MIMO and SISO Self-Tuning Hybrid Position/Force Control of Robotic Manipulators
Can Özsoy and Turan Şişman

52 Calendar

Number 2, February 1996

53 Experiments in Contact Control
Homayoun Seraji, David Lim, and Robert Steele

75 Vision Resolvability for Visually Servoed Manipulation
Bradley J. Nelson and Pradeep K. Khosla

95 Modeling and Fusing Uncertain Multi-Sensory Data
O. A. Basir and H. C. Shen

111 Solving the Forward Kinematics of Parallel Manipulators with a Genetic Algorithm
Roger Boudreau and Noyan Turkkan

Number 3, March 1996

127 Distributed Algorithms for Formation of Geometric Patterns with Many Mobile Robots
Kazuo Sugihara and Ichiro Suzuki

141 Learning Control for a Class of Nonlinear Differential-Algebraic Systems with Application to Constrained Robots
C. C. Cheah and Danwei Wang

153 Dual Quaternion Application to Kinematic Calibration of Wrist-Mounted Camera
Dongmin Kim

163 Adaptive Path Planning and Obstacle Avoidance for a Robot with a Large Degree of Redundancy
John Z. Li and Mohamed B. Trabia

177 A Balancing Technique to Stabilize Local Torque Optimization Solution of Redundant Manipulators
Shugen Ma

Number 4, April, 1996

187 Dual Conformance Index-Based Robotic Arm Placement and Adaptation
Guy M. Cloutier, Richard Gourdeau, and Chantale St-Arneault

203 Adaptive Stabilization and Tracking Control of Electrically-Driven Manipulators
R. Colbaugh, K. Glass, and E. Barany

219 Adaptive Control of Flexible Manipulators Carrying Large Uncertain Payloads
C. J. Damaren

229 Time-Optimal Control of Multiple Cooperating Manipulators with Trajectory and Motion Program Constraints
Li-Chun T. Wang and Ming Jun Kuo

243 Global Performance Evaluation of Image Features for Visual Servo Control
Herry Sutanto and Rajeev Sharma

Number 5, May, 1996

261 An Efficient Algorithm for Generating Manipulator Inertia Matrix Using the Minimum Set of Dynamics Parameters
Haruhisa Kawasaki, Atushi Murata, and Kazuo Kanzaki

275 A Constrained Optimization Approach to Resolving Manipulator Redundancy
Young Whee Sung, Dong Kwon Cho, and Myung Jin Chung

289 A Composite Adaptive Control with Flexible Quantity Feedback for Flexible-Link Manipulators
Lih-Chang Lin and Sy-Lin Yeh

303 Computation of Penetration Between Smooth Convex Objects in Three-Dimensional Space
Chong Jin Ong

317 Evaluating Efficiency of Self-Reconfiguration in a Class of Modular Robots
Gregory Chirikjian, Amit Pamecha, and Imme Ebert-Uphoff

Number 6, June, 1996

341 A Parallel Approach of the Inverse Kinematics Solutions for Robots Using a Transputer Network
Jiann-Shyong Fang and Subhash C. Bose

353 Stability Analysis of a Robust PD Control Law for Robot Manipulators
T. C. Hsia and Z. Mao

359 A Hybrid Actuator Scheme for Robust Position Control of a Flexible Single-Link Manipulator
Seung-Bok Choi and Ho-Cheol Shin

371 Development of Virtual Link Method for the Solution of Hyper-Redundant Spatial Robots
Hashem Ashrafiuon and Kiran Sanka

379 Performance of a Muscle-Like "Leaky" Pneumatic Actuator Powered by Modulated Air Pulses
Jan H. Cocatre-Zilgien, Fred Delcomyn, and John M. Hart

391 Methods for Low-Velocity Friction Compensation: Theory and Experimental Study
John Adams and Shahram Payandeh

Number 7, July, 1996

407 A Fast, Robust Solution to the Stewart Platform Forward Kinematics
P. R. McAree and R. W. Daniel

429 A New Approach to Robust Position/Force Control of Flexible-Joint Robot Manipulators
G. Song and L. Cai

445 Static Calibration of Industrial Manipulators: Design of an Optical Instrumentation and Application to SCARA Robots
Giovanni Legnani, Chiara Mina, and James Trevelyan

461 Optimum Design of a Buoyancy and Gravity-Driven Underwater Robot
A. Baz and L. Gumusel

475 Fuzzy Rule Base Optimization of a Compliant Wrist Sensor for Robotic Assembly
Hakan B. Gürocak

Number 8, August, 1996

489 Experimental Results of an Adaptive Controller for Robot Manipulators
J. S. Yu and P. C. Müller

499 Coordinating Multiple Groups of Robots for Gaiting Process
Maw-kae Hor

515 Force and Position Control of Grasp in Multiple Robotic Mechanisms
Shahram Payandeh and Mehrdad Saif

527 Linearization and Optimization of Robot Dynamics via Inertial Parameter Design
Reşit Soylu and Ali Sarrafi

539 Mapping in Unknown Graph-Like Worlds
Gregory Dudek, Paul Freedman, and Souad Hadjres

Number 9, September, 1996

561 Predictive End-Point Trajectory Control of Elastic Manipulators
Woosoon Yim and Sahjendra N. Singh

571 Sensor-Based Collision Avoidance: Theory and Experiments
Homayoun Seraji, Robert Steele, and Robert Ivlev

587 Forward Displacement Analysis and Uncertainty Configurations of Parallel Manipulators With a Redundant Branch
Leila Notash and Ron P. Podhorodeski

603 Adaptive Explicit Force Control of Position-Controled Manipulators
Kevin J. Wedeward, R. Colbaugh, and A. Engelmann

Number 10, October, 1996

619 Dynamics and Control of Multiple Cooperating Manipulators with Rolling Contacts
Arati S. Deo and Ian D. Walker

649 On the Local Fault Tolerance of a Kinematically Redundant Manipulator
Rodney G. Roberts

663 Ultrasonic Sensor Data Integration and Its Application to Environment Perception
Charles C. Chang and Kai-Tai Song

679 Inverse Analysis of a Planar Two-Spring System
R. Hines, J. Duffy, and E. J. F. Primrose

Number 11, November, 1996

Special Issue on Mobile Manipulators

685 Guest Editorial: Special Issue on Mobile Manipulators
Pierre Dauchez

687 Position/Force Control of a Manipulator Mounted on a Vehicle
C. Perrier, L. Cellier, P. Dauchez, P. Fraisse, E. Dégoulange, and F. Pierrot

699 Robust Control of Mobile Manipulators
Karim A. Tahboub

709 Door-Opening Behavior of an Autonomous Mobile Manipulator by Sequence of Action Primitives
Keiji Nagatani and Shin'ichi Yuta

723 Motion Planning for Mobile Manipulators with a Non-Holonomic Constraint Using the FSP (Full Space Parameterization) Method
François G. Pin, Kristi A. Morgansen, Faithlyn A. Tulloch, Charles J. Hacker, and Kathryn B. Gower

737 Motion Coordination and Reactive Control of Autonomous Multi-Manipulator Systems
U. M. Nassal

755 Coordination and Decentralized Cooperation of Multiple Mobile Manipulators
O. Khatib, K. Yokoi, K. Chang, D. Ruspini, R. Holmberg, and A. Casal

Number 12, December, 1996

765 Normal Forms of Non-Redundant Singular Robot Kinematics: 3 DOF Worked Examples
Robert Muszyński and Krzysztof Tchoń

793 A Class of Nonlinear PD-Type Controllers for Robot Manipulators
Rafael Kelly and Ricardo Carelli

803 Decentralized Adaptive Tracking Control of Robot Manipulators
M. Tarokh

817 Dynamic Modeling and Control of a Multi-Robot System for Assembly of Flexible Payloads with Applications to Automotive Body Assembly
James K. Mills and Jerry G.-L. Ing

837 An Impact Control Scheme Inspired by Human Reflex
Shyh-Woei Weng and Kuu-young Young